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December 14, 1957

VOL. 72, NO. 24 PAGES 369-384

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Test Satellite

See Page 379

A SCIENCE SERVICE PUBLICATION

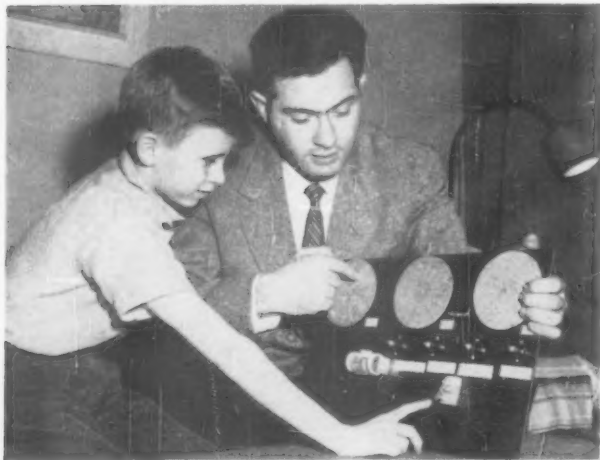
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PUBLIC SAFETY

Drug Halts Lethal Rays

A drug that holds the promise of preventing radiation death or poisoning in the event of a nuclear war or accident is now under development.

► A DRUG that holds great promise for saving many persons who would otherwise die from lethal doses of radiation following a nuclear attack or accident is under development.

Still in the laboratory stages, studies of the drug have been dramatically speeded up by two important findings made by Dr. Friedrich P. Ellinger, chief radiation biologist of the Naval Medical Research Institute, Bethesda, Md. The preparation consists of cell-free saline extracts of mouse spleens.

Up to now, scientists have been able to save mice and other laboratory animals exposed to killing amounts of radiation with the red bone marrow or spleen extract of living cells from mice and other animals.

Now, for the first time, Dr. Ellinger has:

1. Shown that living cells or even fragments of living cells are not necessary for mouse spleen extract to perform its life-saving work as was heretofore thought.

2. Shown that the spleen extract from mice can save guinea pigs from radiation death. This offers hope that the same will hold true for man.

When added together, Dr. Ellinger told SCIENCE SERVICE, these two factors mean there is now "justified hope" that a chemical to prevent radiation death is within reach.

"This is the one hope we cherish and we are now working in this direction," he said.

"As I see it," Dr. Ellinger noted, "the

drug will be used after an exposure to a lethal radiation dose and will save a good percentage of those who would otherwise die."

The Naval researcher pointed that after 15 years of study on radiation poisoning and means either to prevent it or cure it, it is still impossible to say exactly when the life-saving substance will be developed for general use.

"While research has brought to light a variety of agents which protect animals against the lethal effect of radiation if given prior to exposure to the rays," he said, "there are very few means at present available which do save animals after they have been exposed."

"This new agent has proved already to be helpful in post-irradiation treatment and will, in all probability, be useful in medicine in the same manner."

In the studies, Dr. Ellinger prepared cell-free saline extracts from mouse spleens. Guinea pigs were subjected to killing doses of 550 and 600 roentgens of radiation. Then they were injected with the drug shortly after.

At the end of 20 days, a statistically larger number of animals receiving the extract were alive than those that had received only a saline solution, without the extract.

Dr. Ellinger's findings also pave the way to the development of a man-made dupli-

cation of nature's life-saving radiation antidote. When the humoral substance has been isolated from the mouse spleen, it is only a matter of time before it will be identified chemically. This will then mean the strong possibility that it can be made synthetically in the laboratory.

An analogous situation existed some 40 years ago when doctors were forced to give extract of thyroid from cows to persons suffering from thyroid gland troubles. The use of animals as a drug source was a major problem. Its solution was found when thyroxin was duplicated in the laboratory and subsequently made available to the public in limitless supplies by pharmaceutical houses.

Dr. Ellinger's "justified hope" that the radiation death preventive agent is possible is his personal opinion and is not officially that of the Department of the Navy. Dr. Ellinger thinks this is one instance where Defense Department funds have made possible developments which promise to save millions of lives in the event of a nuclear war or accident.

Some of Dr. Ellinger's findings are reported in *Science* (Dec. 6).

Science News Letter, December 14, 1957

● RADIO

Saturday, Dec. 21, 1957 1:45-2:00 p.m. EST
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Mr. Davis will review the year's major science events.

CHEMISTRY

Solar Furnaces Ready Now

► SUN-POWERED furnaces are available now on a mass production basis. The solar furnaces, mounted on surplus military searchlights, make it possible for more colleges and laboratories to conduct high-temperature research on strategic materials.

A mass production model of a solar furnace similar to several built recently by research institutions for their own use was displayed to nearly 40,000 chemists and chemical industry representatives attending the 26th Exposition of Chemical Industries in New York. Gerard J. Wendelken, vice president and general manager of the American Searchlight Corporation, which produces the furnace, told SCIENCE SERVICE the equipment can be afforded by low-budget colleges and research institutions because of a design based on surplus searchlights.

Mr. Wendelken said the mass-produced solar furnace sells for \$8,500. "The searchlights, which now have very little use in this age of high-speed aircraft, originally

cost the government around \$25,000 each." A similar furnace built from new materials would cost a buyer \$40,000 to \$50,000.

Solar furnaces use one or more mirrors to bring the sun's rays to a high-temperature focus. The mass-produced model reaches temperatures up to 8,000 degrees Fahrenheit.

Sun-powered furnaces are used in many types of high-temperature research because of their low-cost operation and high temperatures. They are used in research on ultra-pure metals and other jet and rocket materials particularly because they do not contaminate the materials under study.

When strategic materials are melted in even the hardest and most heat-resistant crucibles or other containers, small amounts of the container enter the molten material as impurities. The same materials can be suspended at the focal point of a solar furnace and melted in one spot without touching a hot container wall.

Science News Letter, December 14, 1957



SOLAR FURNACE — Surplus military searchlights made possible the development of this sun-powered furnace now available on a mass production basis. The American Searchlight Corporation, New York, which produces the furnace, reports temperatures as high as 8000 degrees Fahrenheit have been reached with the furnace.

TECHNOLOGY

Find Nose Cone Metal

► **BERYLLIUM**, one of the newer metals, may prove to be the answer in beating the heat problem of getting a ballistic missile back to earth without having it burn up as it re-enters the earth's atmosphere.

The metal, which is still a novelty in metallic form, has been found to be very "attractive" for making ballistic nose cones in studies by Jackson R. Stalder of the National Advisory Committee for Aeronautics' Ames Aeronautical Laboratory, Moffett Field, Calif.

In comparison with three other materials, Inconel-X, copper and graphite, beryllium came off best as a weight-saver and heat-absorber.

"Despite the fact that the 'perfect' material for a nose cone has yet to be found, we do have a blunt nose cone using the principle of shock wave transference to protect the in-coming missile from burning up. Just such a nose cone that successfully beat the re-entry problem was shown to the American people by President Eisenhower. Beryllium was not used for this nose cone.

Finding a perfect heat-absorber to act as a heat-sink for a ballistic nose cone requires that the material must maintain the structural integrity of the missile, must be as light as possible, and must lend itself to fabrication into the required shapes.

When a ballistic missile enters the earth's atmosphere at high speed, Mr. Stalder says, its total kinetic and potential energy is ultimately dissipated in the form of heat. A portion of this energy is delivered to the atmosphere and the remainder must be absorbed by the missile itself.

The portion absorbed by the missile can either be stored in a heat sink or absorbed and rejected by an internal cooling system.

In trying representative materials of several different groups under conditions simulating a ballistic trajectory, Mr. Stalder found beryllium the most promising for a heat-sink, with graphite the closest runner-up.

Beryllium, the tests showed, is very lightweight with a high specific heat and thermal conductivity. When compared with copper for making a heat-sink, for example, beryllium would result in a weight saving of sixfold. Its oxidation resistance is good and this would eliminate the need for surface protection.

There are drawbacks, however, Mr. Stalder has found. The metal is brittle and in the present state of its metallurgical development, difficult to form in large sections.

Science News Letter, December 14, 1957

PUBLIC HEALTH

Addiction Exaggerated

► **DRUG ADDICTION** among younger persons, although a problem, is not as alarming as most people think it is, the American Medical Association's council on mental health reports.

Frightening images of American youth being preyed upon by unscrupulous dope peddlers are not very true to life.

Addiction apparently spreads from person to person, with addicts giving drugs to the beginner as a friendly gesture. Active "conversions" by drug peddlers play only a very small role in spreading addiction, recent studies have shown.

There are probably not more than 60,000 addicts in the U.S. and only about 13% of them are under 21 years of age. The number of young addicts has increased since World War II, but the problem was not new at that time. A similar alleged increase of young addicts took place after World War I.

Opiate addiction is undesirable but it is not nearly as evil as the public and law enforcement officers think it is, the council reports.

Opiate addiction does not cause the degree of damage to physical health other intoxications tolerated by our society can cause. Nor does it incite its victims to commit violent crimes which they would not commit without the drugs. Opiates are quieting drugs that repress hostile urges and depress sexual drives.

The common idea that addicts continue to take drugs because they fear the withdrawal symptoms may not be too accurate. Addicts recover relatively quickly from the withdrawal illness, the worst of it being over after three to seven days.

It is not unusual for addicts to "kick the habit on the street" without medical help. Many seem to have no overwhelming fear of the withdrawal illness any more than the alcoholic has any great fear of the "hangover."

The report also says that "in view of all available evidence," it would not be wise to set up clinics for supplying drugs to addicts. But this opinion should be reviewed from time to time as new scientific knowledge concerning addiction becomes available.

The council's report is being published in three consecutive articles, the first of which appears in the *Journal of the American Medical Association* (Nov. 30).

Science News Letter, December 14, 1957

BACTERIOLOGY

Nitric Oxide Gas Helps X-rays Kill Bacteria

► **BACTERIA** surrounded by nitric oxide gas become at least twice as sensitive to the killing effects of X-rays as those kept in a normal atmospheric environment, Dr. P. Howard-Flanders, University of California, Berkeley, reports in *Nature* (Nov. 30).

Nitric oxide is not the only gas that can do this. Oxygen has been known for some time to increase the effectiveness of X-rays, but nitric oxide appears to be the first recognized substance that can do the job under a complete lack of oxygen.

All bacteria do not need oxygen to live, and those that do not are called anaerobic bacteria.

One type of such bacteria produces gas gangrene in humans and becomes dangerous only when the oxygen around it is greatly reduced.

The amount of increased sensitivity to X-rays created by the nitric oxide is about the same as that with oxygen, Dr. Howard-Flanders reports.

Science News Letter, December 14, 1957

SCIENCE NEWS LETTER

VOL. 72 DECEMBER 14, 1957 NO. 24

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. St., N.W., Washington 6, D. C., North 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

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Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 3440 P. L. 1 and P. L. 1944, authorized (d) (act of February 28, 1925; 39 U. S. Code 283) authorized February 28, 1950. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index. Member Audit Bureau of Circulation.

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GENERAL SCIENCE

Test Requests Top Record

Student interest in a scientific career is reflected in the number applying for the Seventeenth Annual Science Talent Search test which has increased by almost one-fourth.

► THE NATION'S top test for finding potential young scientists is underway. Approximately 25,000 high school seniors throughout the United States have voluntarily requested to take the Seventeenth Annual Science Talent Search.

This marks an increase of almost 25% over the number of examination requests made last year.

The test, designed to measure ability to think and reason along scientific lines, is given in the public, private and parochial schools during a three-hour session. This session can take place Dec. 2-27. Completed entries must be in the offices of SCIENCE SERVICE by midnight Dec. 27.

Heightened interest in scientific careers is reflected in the unusual number of students competing for the tripled amount of science scholarship awards, totaling \$34,250, provided by the Westinghouse Educational Foundation.

Forty top potential research scientists will be chosen on the basis of their test scores, school records and research papers. These winners will come to Washington for the

Science Talent Institute, Feb. 27 through March 3, and will be judged for the Westinghouse Science Scholarships and Awards.

The Grand Winner will receive a \$7,500 scholarship. The second, third, fourth and fifth place winners will receive scholarships of \$6,000, \$5,000, \$4,000, and \$3,000 respectively. Science awards totaling \$8,750 will be given to others of the 40 winners.

In addition to completing the test, the applicant must write a 1,000-word report on a scientific project of his own choosing. Samples of the research studies reported last year include work on: cancer culture; the classification of fossils; observations of Mars; the effect of metal compounds on the deterioration of rubber; testing color blindness; changes in snail populations; an automatic Wilson cloud chamber; a design for a digital computer; a study of the poison of the Black Widow spider; and a radio frequency heating unit.

In addition to these 40, another 260 seniors will be given honorable mention and also will be recommended for scholarships in colleges and universities.

All this is part of the annual process of

seeking out the high school seniors who show the greatest promise of becoming, in years to come, the outstanding research scientists and engineers of the nation. Wide-spread public and official recognition of the country's need for these young scientists adds particular urgency to this year's Search.

The science aptitude test was designed by two psychologists, Dr. Harold A. Edgerton, New York, and Dr. Stuart H. Britt, Evanston, Ill. The 40 scholarships will be awarded at the discretion of three judges: the two designers of the test and Dr. Rex Buxton, Washington psychiatrist.

State Science Talent Searches, based on entries in the national search, will give students a double chance in these 32 states: Alabama, Arkansas, Connecticut, District of Columbia, Georgia, Florida, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Hampshire, New Mexico, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia and Wisconsin.

Entry material and full details of the Seventeenth Annual Science Talent Search can be obtained by writing to Science Clubs of America, SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D. C.

Science News Letter, December 14, 1957

EDUCATION

Education Tops Other Graduate School Studies

► MORE GRADUATE students in the nation's colleges and universities study education than anything else, and they receive less financial help than anyone else.

This is shown in a National Science Foundation study on graduate enrollment and support for 1954, the most recent year for which data are available.

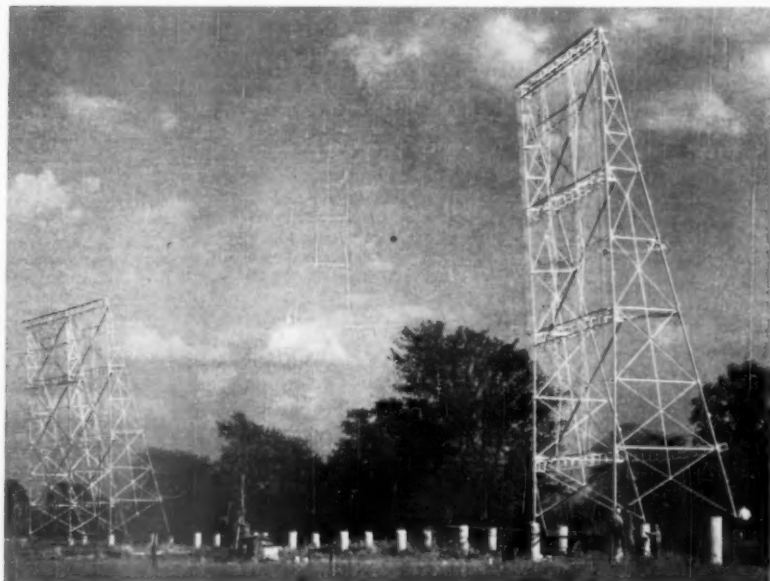
In that year, an estimated 88,500 graduate students of education were enrolled as compared to 58,000 in the natural sciences and engineering and 68,000 in the social sciences, humanities, psychology and other fields. Only four percent of the education graduates received help in the form of assistantships and fellowships. Sixty percent of those studying the natural sciences, on the other hand, received this form of financial help, and from 25% to 30% of all the other graduates, including engineers and historians, received aid.

In addition the average yearly stipend ranged from \$1,560 in engineering to \$920 in education.

A marked difference was noted, the Foundation says, in the pattern of graduate study in education and natural sciences. The average graduate department of education enrolled more than 100 students, most of whom were studying part-time for a master's degree. In the natural sciences the average department enrolled fewer than 20, the majority of whom were full-time students working for their doctor's degree.

Science News Letter, December 14, 1957

Meat is important to the person who has undergone an operation; it promotes speedier healing and restores lost blood.



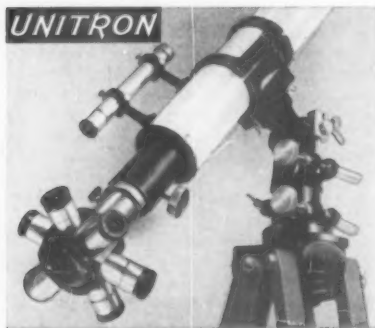
RADIO TELESCOPE—Rising from a field near Perkins Observatory, Delaware, Ohio, are the first sections of a giant radio telescope. The framework, when completed, will form a curved reflector 78 feet high and 360 feet long. Ohio State University is building the large antenna on a 20-acre site contributed by Ohio Wesleyan University. Dr. John D. Kraus of Ohio State, in collaboration with graduate student Robert T. Nash, designed the radio telescope, scheduled for completion in 1959.

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SN—December 14

MEDICINE

Anticoagulants May Fail

The use of anticoagulants as preventive treatment in coronary heart disease has been criticized since it fails to account for the stress factor.

► THE ANTICOAGULANTS President Eisenhower has been taking were unable to prevent his recent "stroke" because of the emotional strain he is under.

Dr. Henry I. Russek, U. S. Public Health Service Hospital, Staten Island, N. Y., spoke about the use of anticoagulants in coronary heart disease to the American College of Chest Physicians meeting in Philadelphia, saying that the failure of such agents is not unusual in cases like that of the President.

"Despite meticulous administration of anticoagulant drugs by eminently qualified physicians, the President has suffered a stroke resulting from closure of a cerebral vessel by a blood clot," he said.

The explanation for this failure in preventive treatment can be found in recent evidence that blood clotting is speeded up by emotional stresses.

Anticoagulant drugs may delay certain chemical reactions involved in blood clotting, but they fail to give full protection in persons under stress.

"Modern physicians must inevitably return to the concept of a generation ago which recognized emotional 'stress and strain' as the leading factor in the causation of 'coronaries' and 'strokes,'" Dr. Russek said.

Daily stresses not only accelerate clot formation but raise the cholesterol level of the blood. A study of 100 young coronary patients, between the ages of 25 and 40, showed the 91% of the victims were either holding down two jobs or working 60 hours a week or more.

The skillful management and prevention of coronary disease can only be achieved by proper balance between work, rest and play. During periods when undue stress is unavoidable, tranquilizers and sedatives may be valuable in lessening the damaging effects of the emotions on the body, he concluded.

Strokes to Be Studied

► A LARGE-SCALE study to find out if anticoagulant drugs can prevent what has happened to President Eisenhower has been announced by Surgeon General Leroy E. Burney, U. S. Public Health Service.

The research project is specifically concerned with preventing cerebral "stroke," a term often used by laymen to describe the President's attack, by means of anticoagulants. These are drugs that lower the blood's ability to clot. They have been used to treat the President.

The study will be made by six medical research centers and will be completed within three years. A group of about 1,800 patients will be studied and will provide

a faster evaluation of anticoagulant treatment than could be made by any one institution in the same time.

Strokes and cerebral vascular diseases rank after heart disease and cancer as killers, and take an estimated 172,000 lives annually in this country.

The study is companion to a broad, nation-wide cerebrovascular research project launched last April by the National Institute of Neurological Diseases and Blindness, Bethesda, Md., to collect and evaluate data on the nature and causes of cerebral strokes as well as on treatment methods.

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MEDICINE

Treatment of Strokes Tough Medical Problem

► "STROKE" conditions put doctors between the devil and the deep blue sea as far as treatment is concerned.

Dr. Derek E. Denny-Brown, Harvard Medical School, Boston, Mass., told the American Medical Association meeting in Philadelphia that vascular spasms in the brain are best treated by lowering the blood pressure. However, when this is done it can cause an equally serious condition known medically as cerebral vascular insufficiency.

This is actually a problem of supply and demand. The brain does not get the full amount of blood it needs and, as a result, such symptoms as aphasia, or speech difficulty, weakness and mental confusion occur.

The whole problem is immensely complicated by high blood pressure and atherosclerosis, Dr. Denny-Brown said.

Vascular spasms take place in persons with continued high blood pressure when segments of the brain arteries constrict or close down because of internal pressure. Brain damage related to the spasm begins as even more persistent narrowing of the constricted vessels continues, until not enough blood gets through to nourish part of the brain.

Blood pressure-lowering drugs can be used when this happens, and they bring the most rapid and direct relief, Dr. Denny-Brown said.

But if the pressure then falls below a certain critical level, it cannot drive the blood through these same arteries, partially closed down from pressure and aging.

Too little pressure, then, brings back the symptoms of aphasia and confusion.

Science News Letter, December 14, 1957

A bar of special alkaline alloy metal about four inches long is designed to eliminate varnish and sludge in heating oils which are major causes of oil burner shutdowns.

GEOPHYSICS

U. S. Satellite Tested

The United States is continuing its final tests with the six-inch satellite preparatory to launching a 20-inch "moon." Another firing will occur in the near future.

See Front Cover

► THE EXPLOSION of the Vanguard rocket at the first U.S. try to launch an artificial earth satellite did not damage the six-inch sphere housed in the rocket's third stage. However, the sphere will not be used for future launchings, but others like it will.

Such failures are to be expected in firing any rocket of new design, even though the three stages that were to hurl the first U.S. moon into an earth-circling orbit had been successfully tested separately.

The Soviet success in launching earth satellites is attributed to the fact that Russians used the same rockets to put their moons into orbit that are used to power their intercontinental ballistic missile. Some tests of these ICBM rockets undoubtedly were failures, also, but were not given any publicity.

Here are the facts concerning the first U. S. artificial earth satellite.

It is a six-inch, four-pound test "moon" containing two radios, transmitting at 108.00 and 108.03 megacycles to within four kilocycles. One is powered by a battery, expected to last about two weeks, the other

by solar cells, which will operate only when the tiny sphere is in the sunlight. Lifetime of the solar cells is not known.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows Naval Research Laboratory scientist Wayne Traylor as he readies a six-inch satellite for vibration tests up to 25 g's at the laboratory in Washington, D. C. The six rectangular objects on the aluminum sphere's surface house solar batteries that are to be evaluated during the test flight for possible use as power supplies for later satellites.

The crystal controlling the broadcasts at the even 108 megacycles is mounted at the satellite's center so its temperature will be as nearly constant as possible.

The crystal controlling the broadcasts at 108.03 megacycles is temperature-sensitive, however, and mounted on the satellite's surface.

The difference between the two frequencies thus indicates the skin temperature, each degree centigrade changing the frequency by about 100 cycles. The temperature so measured is expected to be accurate to within five degrees.

No nickname has yet been given the U.S.

satellites, although various suggestions have been made. Because the Russians beat the U.S. into space, it is possible that all satellites will be nicknamed *sputniks*.

Official names of satellites, subject to approval next year by the International Astronomical Union when it meets in Moscow next August, follow the same system as for comets. (See SNL, Oct. 26, p. 259.)

Satellite experts in Washington expect the 20-inch U.S. satellite will have approximately the same visibility as the first Russian *sputnik*, just detectable by the naked eye under good conditions, but the six-inch sphere can not be seen without binoculars or telescope. The third and propelling stages of the U.S. satellite rockets will probably not be as visible as the Russian ones were because they will not be as large.

Since the U.S. launchings are made at an angle of only 35 to 40 degrees to the equator, the satellites will not be visible from places more than 40 degrees in latitude on each side of the equator. This means they will not be seen north of Philadelphia, Indianapolis, Denver and Reno.

Lifetimes of either the tiny or 20-inch spheres depend upon the accuracy with which they are thrown into orbit. Scientists expect they will circle the earth at least several weeks.

Science News Letter, December 14, 1957

A nuclear center is being established in Puerto Rico to develop a comprehensive program for research and training in nuclear science and engineering and the peaceful applications of nuclear energy in medicine, agriculture and industry.

TECHNOLOGY

Better Rockets Seen

► SOLID propellant rockets, already replacing complicated expensive liquid-fueled engines in the nation's defense effort, are being made safer and more efficient by a new technique of combining two engines in a single rocket, scientists at the American Rocket Society meeting in New York were told.

Many new air-to-air and ground-to-air anti-aircraft missiles will feature two propulsion stages that do not separate in flight after the first stage burns out. Robert S. Newman, assistant principal engineer, solid engine department, Aerojet-General Corp., Sacramento, Calif., said the integrated two-stage, or dual thrust, rockets will be more reliable than many present systems because the joint between the two stages, as well as the complicated separation instruments, will be eliminated.

Many existing defense missiles consist of two stages. The first stage booster gets the rocket off the ground or away from the launching plane and builds up acceleration. The second stage sustainer provides thrust as the missile proceeds to its target.

Booster rockets usually are jettisoned after burn-out to reduce the missile's weight. The separation of the booster from the sustainer is a complicated operation that

rocket engineers would like to avoid, Mr. Newman said.

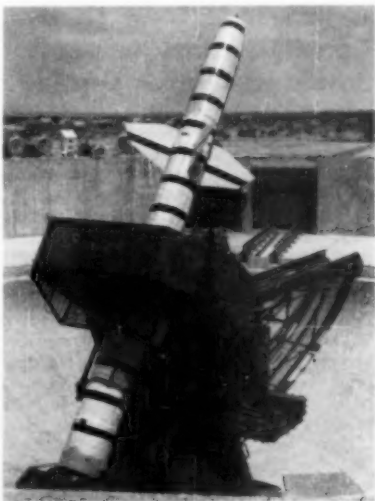
He added that the jettisoned booster section also provides a significant hazard to friendly planes as well as persons on the ground.

The only disadvantage to integrating the booster and sustainer in one unit is that of increased weight during the remainder of flight. This problem will be overcome by more efficient solid propellants that will reduce overall size and weight of the missile, the rocket engineer predicted.

A modification of the dual thrust system was also described. It consists of tandem-mounted rocket engines which actually make up a single engine in two compartments. Each compartment would carry a fuel appropriate to the job it is to do.

During the past year the Defense Department has indicated that simple, inexpensive solid rockets are gradually replacing many of the complicated, and often-times less reliable, liquid-fueled rockets. Mr. Newman said solid propellant chemists have made advances recently that will put solid fuels into rockets for which only liquid fuels would have been considered a few years ago.

Science News Letter, December 14, 1957



MISSILE—Talos missile is shown on automatic missile launcher. Each missile is contained in a reinforced concrete storage cell within a circular magazine. During a tactical engagement, signals are received at the launcher which automatically rotates to the proper missile storage cell. A cart runs from the launcher into the cell, picks up the missile and transfers it to the launcher.

PHYSICS

Physicist Receives \$50,000 Fermi Award

► ON THE fifteenth anniversary of the first self-sustaining nuclear chain-reaction, fathered by Enrico Fermi, Dr. Ernest O. Lawrence, director, University of California Radiation Laboratory at Berkeley, received the second Enrico Fermi Award.

In a simple ceremony, Dr. Lawrence, Nobel laureate and inventor of the cyclotron, was presented with a medal, a citation and \$50,000.

Dr. Lawrence, the second recipient of the Atomic Energy Commission Award, was named for "his invention and development of the cyclotron and for his many other contributions in nuclear physics and atomic energy."

When Dr. Lawrence was named, AEC Chairman Lewis L. Strauss said that "if one of his contributions is to be singled out as having paramount importance, it is the invention, in 1929, of the cyclotron, and its subsequent development into the most effective tool for nuclear research. Without the cyclotron, it is hard to see how the development of nuclear physics to its present advanced state could have taken place."

The first Enrico Fermi Award was bestowed on the late Dr. John Von Neumann, noted scientist and a member of the Atomic Energy Commission, in April, 1956.

Under the Atomic Energy Act of 1954, which authorizes the award, Dr. Fermi himself was honored by the AEC's Advisory Committee.

Science News Letter, December 14, 1957

PUBLIC HEALTH

Cancer Society Issues Smoking-Cancer Leaflet

► "TO SMOKE or Not to Smoke?," a leaflet about smoking and the dangers of lung cancer, has been released for national distribution by the American Cancer Society.

The leaflet points up the evidence against smoking and cites the results of several studies, including the famed Hammond-Horn four-year study of 187,783 men between the ages of 50 and 70.

This revealed that lung cancer death rates are ten times higher among regular cigarette smokers than among those who have never smoked. Among two-packs-a-day smokers the rate is more than 60 times higher.

"Those who have given up smoking have a lower risk of death: those once smoking a pack or more a day, who have given up smoking for at least one year, have a death rate less than half of those who have continued to smoke," the leaflet states.

Also, the over-all death rates from a number of causes, particularly cancer and coronary heart disease, rise with the number of cigarettes smoked.

"It is estimated that a man who smokes two packs of cigarettes a day has about one chance in ten of developing lung cancer, while a non-smoker has only about one chance in 270 of having this disease."

"To smoke or not to smoke is a personal decision. This pamphlet was prepared to give you the information available as of today."

The leaflet concludes with the statement that no one can predict what will happen to an individual, but, in general, those who smoke less are those who live longer.

Distribution of 200,000 copies of the publication is being made through the American Cancer Society's 60 divisions and more than 3,000 units throughout the country.

Science News Letter, December 14, 1957

BIOLOGY

Substance in Cells May Explain Cancer

► INJURED cells in the body appear to give off a growth-promoting substance which may be involved in the production of cancers, Dr. Valy Menkin, Temple University School of Medicine, Philadelphia, has found.

The growth-promoting factor was obtained from fluid taken from the inflamed lung cavities of dogs and caused a marked overgrowth of cells when injected into the breast tissue of rabbits.

The existence of the substance may help explain why long-standing irritation and inflammation has been associated with the production of cancer.

The growth substance is believed to be discharged by the cells as a means of damage repair in the inflamed area. None of it created definite cancers, but some of the lesions it created can perhaps be considered as pre-cancerous, Dr. Menkin says.

The wide range of methods causing cancer suggests that a common denominator, like a growth-promoting factor, may be liberated by cells mildly injured by such things as inflammation, a virus, or hormonal imbalance.

Then, either in the presence of a carcinogen or, perhaps, of an inborn genetic factor, the growth-promoter would favor the development of a cancer, Dr. Menkin reports in *Cancer Research* (Nov.).

Science News Letter, December 14, 1957

AGRICULTURE

Radioactive Coating Shows Tomato Ripeness

► RADIOACTIVITY has been put to work on the tomato vine.

It is a well-known fact that a tomato is ripe when plant sugar has stopped moving into the fruit. Scientists were able to determine when this movement stops by coating tomato plant leaves with a mixture of sugar and radioactive carbon. The radioactive carbon made it possible for the scientists to trace sugar movement through the leaf into the fruit.

Prof. J. P. McCollum, University of Illinois agriculturist, and Dr. John Skok, Argonne National Laboratory, Lemont, Ill., found a tomato makes the best eating "about six days after the first appearance of color."

Science News Letter, December 14, 1957

IN SCIENCE

GENETICS

Yellow Merino Wool Believed Possible

► SCIENTISTS of Australia's Council for Scientific and Industrial Research are trying to breed a merino with a yellow fleece.

Scientists have mated merinos which are mutations from the established strain. Ewes and lambs show similar variations from normal merino characteristics, including the yellow wool.

After the first lambs are born, scientists will test the wool and compare it with other merino fleeces.

A scientist of the department of sheep biology at Prospect, N. S. W., said the scientists would not know what they had bred until they saw the lambs.

The yellow coloring in the parents' wool was not important in itself, but the scientists were proceeding on the logical assumption that if the mutation wool differed from normal in one characteristic, there would be grounds for investigating other variations.

Science News Letter, December 14, 1957

FORESTRY

Christmas Tree Standards Announced by USDA

► THIS YEAR Christmas trees can be bought like beef steaks, U.S. Premium, and U.S. No. 1 and No. 2, graded according to quality.

For the first time Government inspectors will, at the request of either the dealer or the grower, judge trees according to the new U.S. standards for taper, density, balance, freshness and freedom from deformity.

U.S. Premium is the grade given the tree most shoppers would consider perfect. It must be evenly tapered to the top and have four complete "faces," that is, be symmetrical, with well-filled branches.

U.S. No. 1 is approximately equivalent to the premium quality except that the tree need have only three complete faces. However, this makes it a fine tree for putting in a corner or against a wall where a flat side will not show.

U.S. No. 2 is a lighter tree with fewer branches and need have only two complete faces. All trees carrying U.S. grades must be fresh and free from an excess dropping of needles.

The handle or bare trunk "stem" of a graded tree must be about one and one-quarter inches long for each foot of tree height; in addition, the butt or end must be smoothly cut and all side branches below the first whorl must be removed.

The U.S. Department of Agriculture's Agricultural Marketing Service will provide a tree dealer with a certification of inspection at minimum cost.

Science News Letter, December 14, 1957

CE FIELDS

EDUCATION

Establish Registry of Many Retired Teachers

► A NEW source of old wealth is being tapped to meet the shortage of college teachers. A retired professors registry has been established in Washington, D. C.

The registry is designed to establish liaison between retired faculty members and colleges in need of additional staff, according to Dr. Robert K. Carr, general secretary of the American Association of University Professors.

Retired college teachers constitute a significant manpower resource badly needed to meet mounting school enrollments, Dr. Theodore A. Distler, executive secretary of the Association of American Colleges, pointed out. A recent survey by New York University, for example, indicated that more than one-half of a group of retired professors had obtained employment in higher education.

The registry, to be headed by Dr. Louis D. Corson, presently dean of men at the University of Alabama, will be headquartered in Washington, D. C. After supplying factual information and references, the registry will leave the negotiations of employment up to the candidates and the institutions concerned.

The Association of American Colleges and the American Association of University Professors are co-sponsoring the registry under a grant from the Ford Foundation.

Science News Letter, December 14, 1957

NEUROLOGY

Discover Brain Area Unlocking the Past

► THE BRAIN has locked within it a complete record of all events seen at the time they occurred.

Discovery of that area of the brain which unlocks the past, allowing it to flash into consciousness again, was reported to the National Academy of Sciences meeting in New York by Dr. Wilder Penfield, director of the Montreal Neurological Institute in Canada.

This same brain area also provides information for comparing the past with the present. It is opened by direct application of a tiny surge of electricity, Dr. Penfield reported at the Academy's public lecture, the first to be held in Rockefeller Institute's Caspary auditorium.

He described how research to find out which part of an epileptic's brain should be cut out to relieve his illness led to the discovery of the brain's "interpretive cortex." This is the name Dr. Penfield suggests for the newly discovered area, to distinguish it from the motor, sensory and speech areas of the brain.

Previously no function was assigned to

this part of the brain. It covers most of the superior surfaces of the temporal lobe as well as the lateral and probably interior surfaces, Dr. Penfield's studies show.

The record as it is brought to light by a stimulating electrical pulse can be compared to a version of the event as taken by wire recorder or a continuous film strip with a sound track.

"There is a permanent record of the stream of consciousness within the brain," Dr. Penfield explained. "It is preserved in amazing detail."

This record is scanned whenever the brain finds it necessary in order to interpret the present.

As an example of this action, he cited the case when you meet a nearly forgotten acquaintance unexpectedly on the street. Although a moment earlier you could not have pictured the man, now you can compare the past with the present in great detail. Thus, Dr. Penfield said, you can "detect the slightest change" in face, hair, smile, manner of walking, etc.

Science News Letter, December 14, 1957

PSYCHIATRY

Find Abnormal Hormone Changes in Mentally Ill

► ABNORMAL changes occur in the amount of hormones produced by mentally ill patients, Aniela S. Zygmontowicz and Dr. Charles C. Colburn of the Veterans Administration hospital, Bedford, Mass., have found.

The finding is considered to be further evidence of the relationship between body chemistry and mental illness.

They studied the quantity of steroids produced by mental patients, and discovered that the amount produced shows no relationship to stress as it does in the normal person.

Steroids are a specific group of hormones excreted in the urine. They can be isolated and measured by a laboratory process. One group of steroids comes from the adrenal gland and is known as the corticosteroids. In well persons, the body produces greater amounts of these when they are under stress of any type. The high production returns to normal fairly quickly as the stress is overcome.

In schizophrenic mental patients the production cycle was completely different. It alternated between high and low but without regard for the stresses and strains on the patient.

In one case, hormone output was low at first and then rose to normal while the patient remained psychotic. About three weeks after recovery from the psychosis, however, the output went way up, continued at a high level for over three weeks, and then returned to normal.

Another experimental finding was that a dramatic drop in the production of ketosteroids, a group containing the male sex hormone, took place in a psychotic patient at the same time he became rational again.

Further and more extensive tests are being made.

Science News Letter, December 14, 1957

PHYSIOLOGY

Deep Scars Treated With Blood Substance

► THE DEEP pitted scars left by acne, chickenpox and other conditions can now be treated by injections of Fibrin-Foam, an extract of human blood.

This was explained and exhibited by Dr. Arthur S. Spangler, Harvard Medical School, Boston, Mass., to the American Medical Association meeting in Philadelphia.

The new scar treatment involves cutting the fibrous strands beneath each scar and then injecting the Fibrin-Foam beneath the scar. This raises the bottom of the scar to the level of the rest of the skin and within several months the Fibrin-Foam has been absorbed and replaced by normal tissue.

The method is good for large and small scars and either shallow or deep ones. It is usually painless, and although the scar area may be black and blue for two or three days, the skin soon resumes its normal color, Dr. Spangler said.

The skin covering the scar sometimes is so thin that even after treatment it is still visible. However, it is much less conspicuous and can easily be covered with make-up, he added.

The method has been used on patients from five to fifty years old who have been carefully watched for as long as three years afterwards. There has been no infection or thickening of the scars and the results have been lasting.

Science News Letter, December 14, 1957

PSYCHOLOGY

Artist's Choice of Colors Influenced by Psychology

► WHAT CAUSES an artist to choose particular colors or tones in his paintings?

According to Gordon M. Nunes, associate professor of art at the University of California at Los Angeles, the choice is dependent largely upon psychological events and traumas in the artist's life.

He outlines this theory in a recent study entitled "Psychoanalysis and Contemporary Painting."

"Color to an artist is like the tone of a voice to the analyst," Prof. Nunes says. "A certain color may be crucially tinged with meaning to one artist, but not to another."

"And while one artist may reveal life material through direct symbols, such as the figure or face of a man, others may do it through colors or other non-figurative pictorial events."

In a study of the lifetime production of one artist known to him personally, Prof. Nunes was able to associate the artist's consistent shunning of dark backgrounds with certain childhood fears.

The primitive school of painting (Henri Rousseau, Grandma Moses), with its direct sensory contact with color, its use of tranquil or festive but seldom disturbing subject matter, represents to Prof. Nunes some regression to certain "conflictless feelings of childhood."

Science News Letter, December 14, 1957

GENERAL SCIENCE

Scientific Gifts for Christmas

These unusual gift suggestions, at a wide variety of prices, are based on recent studies of the hobbies and "Wish Lists" of nearly 450 young scientists.

By SHIRLEY MOORE

► IF YOU have a junior scientist in your house, or among your young relatives or friends, you may have wondered what sort of Christmas gift really would please this kind of youngster.

Some helpful information and unusual gift ideas have been discovered in a recent study of the hobbies and "Wish Lists" of nearly 450 science-minded teen-agers. Finalists in the Seventh and Eighth National Science Fairs, whose ages range from 14 to 19, were asked to name their hobbies and to list gifts they would choose for their awards if they should be judged winners at the Fair.

The amazingly varied interests and wishes revealed in this SCIENCE SERVICE study suggests that the efficient way of gifting a high school-aged science enthusiast is to find out what field you are encouraging and what particular gaps in equipment you might be able to fill, or to decide what new interest you would like to spark.

With a little imagination and resourcefulness, you can then find a gift exactly tailored to the youngster you want to please, and for almost any amount of money you plan to spend.

Chemistry Gifts

For example, if the field is chemistry, there are such stocking stuffers as test tubes (50 cents a dozen and up), a test tube brush (35 cents) or rack (60 cents), a lab apron (\$1.45 up), small amounts of chemicals (15 cents up), rubber and glass tubing (40 cents up) and similar inexpensive equipment. Sometimes these items are available at large drug stores, surgical supply shops or student supply stores near colleges. Better still, if there is a scientific supply company in your vicinity, you can usually order by phone or visit the office to make your purchase. All the major companies issue complete catalogues for mail order service, and many high schools have copies you might use.

SCIENCE NEWS LETTER is a welcome gift to most young chemists (\$5.50 a year) and they would almost surely enjoy CHEMISTRY magazine, now especially edited for students and their teachers (\$4 a year).

If you are in no position to buy the telescope, microscope or binoculars on the Wish Lists of many teen-agers, look into the small accessories such as polishing agents, lens cleaning papers (25 cents to 50 cents), star charts (50 cents and up), leaflets, books and periodicals in these fields (10 cents to several dollars).

If you would particularly like to give a

book, but are uncertain about which book, or the price is beyond your Christmas budget, how about a gift certificate that will pay for at least part of the book? Do not overlook the excellent paperback reprints of science classics and paper editions of new and exciting writing in nearly every field of science.

If you live in a city where there is a fine museum, investigate their unusual and expert publications, color slides, models and other authentic but relatively inexpensive materials.

Few of us can give our favorite young scientists the high-fidelity components, radio kits or tape recorders they may have been longing for, but how about tape, or tape recordings, records, protective plastic envelopes for records, radio log books?

Equipment Accessories

Think, too, about film for the camera, a lens brush, a slide file, the many kinds and sizes of indispensable files and cabinets, notebooks, bookends, a pocket hand lens (\$1.50 up), a pocket slide rule (75 cents up), stamp hinges (25 cents to 50 cents), coin albums (35 cents) and other small accessories or pocket versions of major equipment.

If you live in a different part of the country from your rock and mineral collector, a small box of specimens from your area may please him inordinately. This would be true for collectors of many kinds, and you may be able to fill empty places with very little trouble or expense once you have found out approximately what it is you are looking for.

The junior high school years, from 12 to 14 or 15, are sometimes the most important in determining whether or not a youngster is going to become a scientist. SCIENCE SERVICE studies show that this is most often the period when a latent spark of ability and interest becomes a flame of enthusiasm and talent. So from this point on, it is doubly important to be sure that young people are given every opportunity to become acquainted with the fascinating adventure of science hobbies, and be given full encouragement to explore whatever catches their interest.

With this in mind, one of the most stimulating and original Christmas gifts you could possibly give an embryo scientist is a catalogue or two from scientific supply companies and a check to spend on his own choice of the highly intriguing materials available.

In these catalogues and specialized bulletins there are photographs of and information about such captivating subjects as micropaleontology and mineral fluorescence. Basic materials for fluorescent experiments may cost from \$2 to \$6. (Seven fluorescent specimens, a label list and an



SCIENCE TREE—A typical young family looks over a wide assortment of scientific equipment this junior scientist has received for Christmas. Scientific gifts, such as these supplied by the Fisher Scientific Co., have been credited with sparking many a youngster's first interest in science.

argon lamp for a little more than \$2; or a two-watt Strobilite ultraviolet lamp and six Strobilite ultraviolet liquids for about \$6.) An introductory micropaleontology set of six slides costs about \$6.50; additional slides are about \$1 each.

A subscription to THINGS of Science or a selection of one or more of the kits (75 cents each, three for \$1.50, a year's subscription to the monthly kits for \$5, from SCIENCE SERVICE) would be another good "science sampler" gift. Each unit contains unusual materials of scientific interest, information about them, suggestions for experiments and exhibit cards so that the units may be collected and displayed as a miniature museum. A great variety of subjects is covered, from gibberellic acid to plastics, from straight-line geometry to copper, from mollusks to carbon.

These are a few of the scientific supply companies with catalogues available: Ward's Natural Science Establishment, Inc., 3000 Ridge Road East, Rochester, N.Y.; Edmund Scientific Company, Barrington, N.J.; Fisher Scientific Company, 7722 Woodbury Drive, Silver Spring, Md.; or General Biological Supply House, Inc., 8200 South Hoyne Ave., Chicago 20, Ill.

Now that children's magazines, comics and TV programs include basic science and new developments as a matter of course, even science-minded kindergartners demand more from us than "cute" fantasy. They are insulted by grossly inaccurate toy rockets and satellites, and they are baffled by books that misrepresent or overpopularize scientific facts.

Wish List Contents

Nearly 59% of the teen-agers questioned list sports hobbies which range from swimming, skin diving and boating through all the usual competitive sports, camping and hiking activities to spelunking and flying.

About a third of these teen-agers are musicians or much interested in music. The arts in one form or another are leisure time pursuits of 20%, closely followed by photography and reading.

Optical equipment leads the field of Wish Lists with nearly half of the students wanting such items as microscopes (\$15 to \$200), binoculars (\$10 to \$50) and telescope parts (\$2.50 up).

Books, including highly technical works in nearly every field, are listed by nearly 40%. Almost as many mention photographic equipment and supplies. Precision slide rules (\$3 to \$25), radio kits and equipment and electric and electronic kits, motors and accessories are listed by a fourth of the young winners.

Influences that stir productive interest in science are varied, but many successful scientists clearly remember having been introduced to the wonder of the sky or the earth's rocks and creatures by a member of the family or an interested relative or friend.

If this year's thoughtfully chosen Christmas gifts inspire even a few girls and boys to become science adventurers, what invaluable gifts Santa Claus will have left under the world's Christmas tree!

Science News Letter, December 14, 1957

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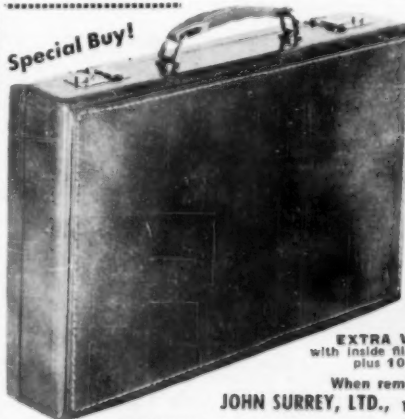
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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE ADVANCEMENT OF SCIENCE: Vol. XIV. No. 54—P. M. S. Blackett and others—*British Association for the Advancement of Science*, 150 p., illus., paper, 7 s., 6 d. Containing the presidential address and the addresses by presidents of sections.

ANTARCTIC NIGHT: One Man's Story of 28,224 Hours at the Bottom of the World—Jack Bursey—*Rand McNally*, 256 p., illus., \$4.95. The author has studied the lure and beauty of the Antarctic as member of Byrd's Antarctic Expedition of 1928-30, then the U. S. Antarctic Service Expedition of 1939-1941 and finally on Operation Deepfreeze of 1955-57.

THE ANTS—Wilhelm Goetsch, translated by Ralph Manheim—*University of Michigan Press*, 169 p., illus., \$4.50. The author was attracted to the study of ants by a desire to find out how much truth lies in the old legends.

AUTOMATION IN PRACTICE—S. E. Rusinoff—*American Technical Society*, 261 p., illus., \$6.50. A survey of the latest techniques of automatic production as they are actually applied in manufacturing and metal working industries.

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CATALYSIS IN PRACTICE: A Collection of Papers Originally Presented in Philadelphia, Pa., in April, 1957, Under the Auspices of the Philadelphia-Wilmington Section of the American Institute of Chemical Engineers and the School of Chemical Engineering, University of Pennsylvania—C. H. Collier, Ed.—*Reinhold*, 153 p., illus., \$3.95. Actual methods, economics and problems as presented by leading practitioners in chemical process industries.

CHEMICAL ENGINEERING IN THE COAL IN-

DUSTRY: An International Conference Organized by the National Coal Board, Great Britain—Forbes W. Sharpley, Ed.—*Pergamon Press*, 141 p., illus., \$8.50. Containing papers presented at the Conference.

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THE OBSERVER'S HANDBOOK 1958—Ruth J. Northcott, Ed.—*Royal Astronomical Society of Canada*, 84 p., illus., paper, 75 cents. Important reference material for astronomers.

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PSYCHIATRIC INPATIENT TREATMENT OF CHILDREN—J. Franklin Robinson and others, Eds.—*American Psychiatric Association*, 194 p., \$3.50. Describing the facilities available for the care of emotionally disturbed children.

THE ROCKEFELLER FOUNDATION ANNUAL REPORT, 1956—Dean Rusk, President—*Rockefeller Foundation*, 435 p., illus., free upon request direct to publisher, 49 West 49th Street, New York, N.Y. Reporting how the Foundation used more than \$30,000,000, \$7,000,000 more than its annual income, for humanitarian purposes.

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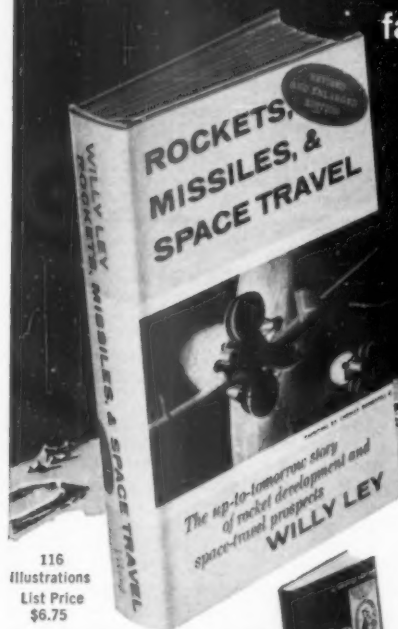
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Questions

BACTERIOLOGY—How is nitric acid gas related to bacteria's sensitivity to x-rays? p. 372.

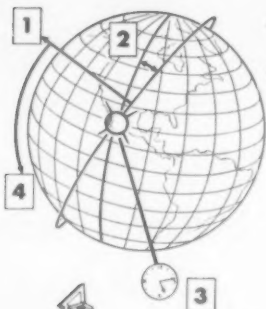
PUBLIC SAFETY—What animal organ was used as a source for a drug that may prevent radiation death? p. 371.

TECHNOLOGY—What metal has been proposed for the nose cone of ballistic missiles? p. 372.

Photographs: Cover and p. 375, U.S. Navy; p. 371, American Searchlight Corporation; p. 373, Ohio State University; p. 378, Fremont Davis; p. 384, Eastman Chemical Products, Inc.

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GEOPHYSICS

Sputnik Rocket Falls to Earth

► THE FLAMING death of sputnik I's rocket occurred Saturday night, Nov. 30, in the South Pacific off the coast of South America.

It was last "sighted" whirling southward at 7:11 p.m. EST by the large radar antenna at Stanford University in California. Since then, there have been no confirmed sightings of it.

"From all indications the rocket fell to earth on the weekend of Nov. 30, probably Saturday night," said two top satellite scientists, Drs. Fred L. Whipple and J. Allen Hynek, director and associate director of the Smithsonian Institution's Astrophysical Observatory, Cambridge, Mass. They reported there is very little chance anyone saw it fall, and even less chance any fragments will be recovered.

The rash of sightings of flaming objects in the sky from various areas around the world, particularly Germany and Alaska, probably resulted from "fireballs." Although no meteor shower is occurring now, the man-made objects sent circling the earth by the Russians have made many persons more aware of events in the heavens.

Despite the many visual sightings of sputnik I's rocket, both by individuals and organized Moonwatch teams, very few photographs with sufficient precision for measuring the earth's shape were taken of it. One reason was the large field cameras especially designed for photographing earth satellites were not in position.

Science News Letter, December 14, 1957

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❁ **CHRISTMAS TREE STAND**, that is described as unbreakable is made of glass fiber reinforced plastic. The stand has a 15-inch base and can be used indoors or outdoors. It also has a deep well which will hold water and adjustable clamps to hold the tree.

Science News Letter, December 14, 1957

❁ **COIN HOLDER** helps you with Christmas parking problems. The plastic holder can be attached wherever desired in an automobile with a screwdriver, but without drilling holes. It holds four nickles and six dimes or pennies. The coin storer is available in five colors.

Science News Letter, December 14, 1957

❁ **CATCH GAME** for both children and adults consists of saucers that fit on the hand like shields, and a dart-like feathered arrow with a suction-cup head. Each saucer has a scoring target on its face. The catcher scores, rather than the thrower, when the bird is caught on the target.

Science News Letter, December 14, 1957

❁ **PLASTIC CHRISTMAS TREE** is reusable. Designed as an outdoor decoration, the tree, shown in the photograph, is cut to the shape of an evergreen and is vacuum



formed from a sheet of a butyrate plastic. It is wired for lighting and equipped with sockets that take regular Christmas tree bulbs.

Science News Letter, December 14, 1957

❁ **MONEY BELT** for Dad is made of morocco-grained steerhide and has a concealed inside zippered money holder. The belt-wallet combination also features a pearl initial monogram buckle. It is available in black or brown.

Science News Letter, December 14, 1957

❁ **ANGEL KIT** for the do-it-yourself Christmas decorator contains two sheets of copper that make one seven-inch angel and four, four-inch angels. Copper curls, tape and instruction sheet are included. A pair of household scissors is all that is needed.

Science News Letter, December 14, 1957

❁ **CHRISTMAS CARD** opens to let Santa Claus fly out. Santa can be wound up and inserted in any letter, book or Christmas gift and can be used again and again. It is five and one-half inches high and is available with a greeting card and envelope.

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❁ **MITTS AND MUFFS** for Mom are made of rabbit fur and leather. The matching set has furry white bunny mitts with palms of leather in one of five colors and furry earmuffs with plastic headband in the same color choice.

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Nature Ramblings



By HORACE LOFTIN

➤ **OFTEN**, one of the biggest problems in science is not that too little research has been done, but that the data which have been accumulated become pigeon-holed and lost to view.

This was what happened in the scientific study of birds during the latter half of the 19th century. A vast amount of information had been collected on American birds since the time of Audubon and before, but nowhere was this brought together into a meaningful, unified picture.

At this time, the young American Ornithological Union formed a committee to organize the welter of facts about birds in the U. S. From their work, a new book emerged in 1886, the first edition of the "A.O.U. Check-list of North American Birds."

This volume soon came to be the bible of American bird students. It clarified the complicated business of scientific names, common names, and sub-species. It brought

Birdman's Bible



together in summary form knowledge of the breeding, distribution and migration of our birds.

But soon, science had outdated this first edition, as new facts in bird study came to light. Another edition was forthcoming in 1895, then a third in 1910, and a fourth in 1931.

This year is a big year among American bird students, with the new arrival of the Fifth Edition of the "A.O.U. Check-list."

This 1957 edition has been under prepa-

ration since 1939, by a committee of America's top birdmen. It is at the same time a fatter and a slimmer volume than its 1931 predecessor. Fatter, since the fourth edition covered 1,420 species and subspecies, while this number has grown to 1,686 in the new edition.

It is slimmer in that a sizable section on fossil American birds has been omitted from the new edition. Our knowledge of fossil birds has increased so much that including them in the new volume would have required more than 100 additional pages. As is, the fifth edition is 691 pages long.

Perhaps the most intriguing pages of this book to bird students are those containing the "Hypothetical List" of rare or exotic birds that have been reported from North America but not sufficiently verified. The birdman who can make the record that removes a bird from this "hypothetical list" to the accepted list of North American birds would have a fine feather added to his cap!

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